

**Bachelor of Printing Engineering Examination, 2023**  
**(2<sup>nd</sup> Year- 2<sup>nd</sup> Semester)**  
**Ink Technology**

**Time: Three hours**

**Full Marks: 100**

**Group - I**

**Answers question no. 1 and any one from the rest. (50)**

- (1) (a) What happen if the yield value of ink is higher than the shear stress in the duct? 3  
 (b) What are the factors that determine the choice of solvent in paste ink? 3  
 (c) What should be the tack no. of a standard sheetfed ink? 1  
 (d) Site an example of non drying oil. 1  
 (e) Why Xenon arc is used as a light source for lightfastness test of pigment? 1  
 (f) Which form of titanium dioxide is preferred for gravure inks and why? 2  
 (g) How chromophoric group functions in pigment? 3  
 (h) What happen if the wax is too soluble in the ink? 3  
 (i) What are the advantages of synthetic resin over natural resins? 2  
 (j) What happen when first down ink has the lowest tack than the succeeding colors in multicolor printing? 2  
 (k) What are the factors on which the selection of dispersing equipment depends? 2  
 (l) 'Incorrect use of surfactants can result in decreased adhesion to some substrates' –Justify. 3  
 (m) What happens when rosin is heated with an oil reactive pure phenolic resin at 150<sup>0</sup>C ? 2  
 (n) Why dilatants inks are not suitable for letterpress process? 2
- (2) (a) Why plasticizer is used in ink? How plasticizer works? Give one example of plasticizer. 5  
 (b) Differentiate between heatset and quickset ink. 3  
 (c) How alkyd resins are prepared? What are the functions of alkyds in printing ink? 5  
 (d) How adhesion of dried ink film on non-absorbent substrates is controlled? 4  
 (e) What will happen if para-substituted phenol reacts with aqueous formaldehyde under reflux in the presence of an alkaline catalyst? 3
- (3) (a) Which additive is used to promote dispersion of pigment? 1  
 (b) Why flushed pigments named so? Write down its advantages and disadvantages. 5  
 (c) Why process color printing mostly uses organic pigments? 4  
 (d) 'Thixotropy is a time dependent phenomenon' – Justify. 4  
 (e) What happen if the pigment flocculates? 2  
 (f) Write down the advantages of using channel black. 2  
 (g) Write down the functions of varnish in printing ink. 2

[ Turn over

**Group - II**

**Answer any two questions. (20)**

- (4)(a) Write down the working procedure of Z-arm mixers. Which ink manufacturing process employ this mixer? 5  
 (b) Describe briefly a typical cooking cycle that takes place during the manufacture of high gloss varnish used in a lithographic ink. 5
- (5) (a) How pigment chips are manufactured? Write down its uses. 5  
 (b) Write down the advantages of horizontal bead mill over vertical bead mill. 5
- (6) (a) Write down the general procedure to get proper pigment dispersion. 5  
 (b) Write down the advantages and disadvantages of Ball mill. 5

**Group - III**

**Answer the following questions. (30)**

- (7)(a) What are the limitations of IGT printability tester? Explain the working of the equipment which is adopted to overcome those limitations. 5  
 (b) What is ink tack? Write down its importance in printing ink. How is the tack measured? 5  
 (c) How dispersion of ink can be measured? 5  
 or  
 (d) What are the properties of ink affected by acid value of resin? How acid value of resin can be determined? 5
- (8) (a) Write difference between drying time and setting time? 3  
 (b) What are the causes and effects of streaking problem in gravure printing? 5  
 (c) Differentiate between scumming and tinting problem. 4  
 (d) Write short notes on Turner bar marking. 3